

CLAIMS

1. A tray-shaped dental treatment device comprising:

a moisture-resistant barrier layer having a front side wall and a bottom wall;

said bottom wall including a plurality of cuts positioned so as to help said bottom wall better conform to abrupt changes in the diameter of a person's teeth where the bicuspid and canines meet; and

a dental treatment composition.

2. A tray-shaped dental treatment device as recited in claim 1, further comprising an exoskeleton having a tray-like configuration configured to receive said moisture-resistant barrier layer.

3. A tray-shaped dental treatment device as recited in claim 2, wherein said exoskeleton includes a handle.

4. A tray-shaped dental treatment device as recited in claim 1, wherein each of said cuts comprises a notch.

5. A tray-shaped dental treatment device as recited in claim 1, wherein said tray-shaped dental treatment device is sized and configured so as to fit over at least a portion of a person's upper dental arch.

6. A tray-shaped dental treatment device as recited in claim 1, wherein said tray-shaped dental treatment device is sized and configured so as to fit over at least a portion of a person's lower dental arch.

7. A tray-shaped dental treatment device as recited in claim 1, wherein said dental treatment composition comprises at least one of a sticky viscous gel, a less viscous gel, a highly viscous putty, or a substantially solid composition.

8. A tray-shaped dental treatment device as recited in claim 7, wherein the dental treatment composition includes at least one tissue adhesion agent.

9. A tray-shaped dental treatment device as recited in claim 8, wherein said dental treatment composition further includes at least one active agent.

10. A tray-shaped dental treatment device as recited in claim 9, said active agent comprising at least one of a dental bleaching agent, a desensitizing agent, a remineralizing agent, an antimicrobial agent, an antiplaque agent, an anti-tartar agent, or another medicament.

11. A tray-shaped dental treatment device as recited in claim 8, said tissue adhesion agent comprising polyvinyl pyrrolidone.

12. A tray-shaped dental treatment device as recited in claim 8, said tissue adhesion agent comprising at least one of carboxypolymethylene, polyethylene oxide, polyacrylic acid, copolymer of polyacrylic acid, polyacrylate, polyacrylamide, copolymer of polyacrylic acid and polyacrylamide, PVP-vinyl acetate copolymer, carboxymethylcellulose, carboxypropylcellulose, polysaccharide gum, and protein.

13. A tray-shaped dental treatment device as recited in claim 8, said tissue adhesion agent having a concentration in a range of about 10% to about 90% by weight of said treatment composition.

14. A tray-shaped dental treatment device as recited in claim 8, said tissue adhesion agent having a concentration in a range of about 20% to about 80% by weight of said treatment composition.

15. A tray-shaped dental treatment device as recited in claim 8, said tissue adhesion agent having a concentration in a range of about 40% to about 75% by weight of said treatment composition.

16. A tray-shaped dental treatment device as recited in claim 8, wherein the treatment composition comprises a substantially solid adhesive composition and at least one of a sticky viscous gel, a less viscous gel, or a highly viscous putty adjacent to at least one of said adhesive composition or said barrier layer.

17. A tray-shaped dental treatment device as recited in claim 1, wherein said device is contained within a sealed package prior to use.

18. A tray-shaped dental treatment device as recited in claim 1, further comprising a notch in said bottom wall so as to help said tray-shaped dental treatment device to more easily spread open or compress in the area of a person's incisors.

19. A tray-shaped dental treatment device as recited in claim 1, further comprising at least one V-shaped or U-shaped indentation in said bottom wall configured to be inserted into the depression typically found along the top surfaces of a person's molars.

20. A tray-shaped dental treatment device as recited in claim 1, wherein said front side wall and bottom wall include radii of curvature that account for typical flaring of a patient's incisors.

21. A tray-shaped dental treatment device comprising:

a moisture-resistant barrier layer having a front side wall and a bottom wall;

said bottom wall including a plurality of cuts positioned so as to help said bottom wall better conform to abrupt changes in the diameter of a person's teeth where the bicuspid and canines meet;

a substantially solid adhesive composition that has increased adhesiveness to teeth when moistened with saliva or water, said adhesive composition including;

at least one active agent; and

at least one tissue adhesion agent that contributes or provides

increased adhesiveness to oral tissue when moistened with saliva; and
at least one of a sticky viscous gel, a less viscous gel, or a highly viscous
putty adjacent to at least one of said barrier layer or said adhesive composition.

22. A tray-shaped dental treatment device as recited in claim 21, further
comprising an exoskeleton having a tray-like configuration configured to receive said
moisture-resistant barrier layer.

23. A tray-shaped dental treatment device as recited in claim 21, said barrier
layer comprising a mixture of ethyl vinyl acetate and polypropylene.

24. A tray-shaped dental treatment device as recited in claim 23, said barrier
layer comprising up to 50% polypropylene by weight.

25. A tray-shaped dental treatment device as recited in claim 23, said barrier
layer comprising about 5% to about 40% polypropylene by weight.

26. A tray-shaped dental treatment device as recited in claim 23, said barrier
layer comprising about 10% to about 30% polypropylene by weight.

27. A tray-shaped dental treatment device as recited in claim 21, said barrier
layer comprising at least one polyolefin.

28. A tray-shaped dental treatment device as recited in claim 27, said polyolefin comprising at least one of polyethylene, high density polyethylene, low density polyethylene, ultra-low density polyethylene, polypropylene, or polytetrafluoroethylene.

29. A tray-shaped dental treatment device as recited in claim 21, said barrier layer comprising at least one of wax, metal foil, paraffin, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, polycaprolactone, polyester, polycarbonate, polyurethane, polyamide, or polyesteramide.

30. A tray-shaped dental treatment device as recited in claim 21, wherein said barrier layer has a cross-sectional thickness in a range of about 0.025 mm to about 1.5 mm.

31. A tray-shaped dental treatment device as recited in claim 21, wherein said barrier layer is sized and configured so as to approximately terminate at or near a person's gingival margin when said tray-shaped dental treatment device is in use.

32. A tray-shaped dental treatment device as recited in claim 21, said at least one sticky viscous gel, less viscous gel, or highly viscous putty includes a dental bleaching agent.

33. A tray-shaped dental treatment device as recited in claim 32, said dental bleaching agent comprising at least one of carbamide peroxide, metal peroxide, percarbonate, perborate, peroxy acid, peroxy acid salt, chlorite, or hypochlorite.

34. A tray-shaped dental treatment device as recited in claim 32, said dental bleaching agent having a concentration in a range of about 5% to about 80% by weight of said at least one sticky viscous gel, less viscous gel, or highly viscous putty.

35. A tray-shaped dental treatment device as recited in claim 32, said dental bleaching agent having a concentration in a range of about 10% to about 60% by weight of said at least one sticky viscous gel, less viscous gel, or highly viscous putty.

36. A tray-shaped dental treatment device as recited in claim 32, said dental bleaching agent having a concentration in a range of about 20% to about 50% by weight of said at least one sticky viscous gel, less viscous gel, or highly viscous putty.

37. A tray-shaped dental treatment device comprising:
a moisture-resistant barrier layer having a front side wall and a bottom wall;
said bottom wall including at least one V-shaped or U-shaped indentation
configured to be inserted into the depression typically found along the top surfaces of
a person's molars; and
a dental treatment composition.

38. A tray-shaped dental treatment device comprising:
a moisture-resistant barrier layer having a front side wall and a bottom wall;
said front side wall and bottom wall including radii of curvature that account
for typical flaring of a patient's incisors; and
a dental treatment composition.

39. A kit for use in bleaching a person's teeth comprising a plurality of tray-shaped dental treatment devices according to claim 1.

40. A kit as recited in claim 39, wherein at least some of said devices are stacked and interested together.

41. A kit as recited in claim 39, wherein said kit includes from 3 to 10 tray-shaped dental treatment devices.

42. A method for bleaching a person's teeth, comprising:

- (a) obtaining a tray-shaped dental treatment device as recited in claim 1;
- (b) placing said tray-shaped dental treatment device over at least a portion of the person's teeth for a desired time period, a moistened adhesive composition or other dental treatment composition adhering and retaining said tray-shaped dental treatment device against the person's teeth during the desired time period.

43. A method for bleaching a person's teeth as recited in claim 42, wherein said tray-shaped dental device includes a substantially solid adhesive composition that has increased adhesiveness to teeth when moistened with saliva or water, said substantially solid adhesive composition including at least one tissue adhesion agent that contributes or provides increased adhesiveness to oral tissue when moistened; and

wherein said method further comprises moistening an exposed surface of said substantially solid adhesive composition so as to increase adhesiveness of said adhesive composition to teeth prior to placing said device over at least a portion of the person's teeth.

44. A method for bleaching a person's teeth as recited in claim 43, wherein moistening an exposed surface of said substantially solid adhesive composition is performed by applying water or an aqueous solution to the exposed surface.

45. A method for bleaching a person's teeth as recited in claim 43, wherein moistening an exposed surface of the substantially solid adhesive composition is performed by allowing residual saliva on the person's teeth to moisten the exposed surface as said tray-shaped dental treatment device is placed over the person's teeth.

46. A method for bleaching a person's teeth as recited in claim 42, further comprising removing said tray-shaped dental treatment device.

47. A method for bleaching a person's teeth as recited in claim 46, said tray-shaped dental treatment device being removed about 10 to about 30 minutes after being placed over the person's teeth.

48. A method for bleaching a person's teeth as recited in claim 46, said tray-shaped dental treatment device being removed about 30 minutes to about 2 hours after being placed over the person's teeth.

49. A method for bleaching a person's teeth as recited in claim 46, said tray-shaped dental treatment device being removed about 2 hours to about 12 hours after being placed over the person's teeth.

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A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111